



Munich Personal RePEc Archive

Financial liberalization, disaggregated capital flows and banking crisis: Evidence from developing countries

NABILA BOUKEF JLASSI and HELMI HAMDI

Laboratoire d'Economie d'Orléans (LEO), Université d'Orléans,
Aix-Marseille University - CERGAM

2013

Online at <http://mpa.ub.uni-muenchen.de/55779/>

MPRA Paper No. 55779, posted 20. May 2014 17:58 UTC

Financial liberalization, disaggregated capital flows and banking crisis: Evidence from developing countries¹

Helmi Hamdi

Aix-Marseille University
CERGAM (E.A 4225), France
helmi_aix@yahoo.fr

Nabila Boukef Jlassi

Laboratoire d'Economie d'Orléans (LEO), Université d'Orléans,
Faculté de Droit, d'Economie et de Gestion.
nabila.boukef-jlassi@etu.univ-orleans.fr

Abstract

The aim of this paper is to examine whether or not financial liberalization has triggered banking crises in developing countries. We focus in particular on the role of capital inflows as their volatilities threat economic stability. In the empirical model, based on Panel Logit estimation, we use the two common financial liberalization indicators (*de facto* and *de jure*) for a panel of 58 developing countries for the period from 1984 to 2007. Unlike the previous studies, this paper reveals that both indicators of financial liberalization did not trigger banking crises in our sample.

JEL Classifications: E44, G21, G28, F36

Keywords: Banking Crises, Financial Liberalization, Capital Flows, Developing Countries

¹ This paper is a part of a research project supervised by Professor Jean-Paul POLLIN. The authors are grateful to him for his guidance and his useful comments and advices.

Disclaimer. The opinions expressed in this article are those of the authors and they do not necessarily represent the official position of the Central Bank of Bahrain..

1. Introduction

Financial liberalization is defined as the implementation of a set of measures aimed at eliminating the different restrictions and repression on the financial sector of a country that could hinder the well-functioning of its economy. According to McKinnon (1973) and Shaw (1973), the main source of repression is indubitably the intervention of the government in the monetary sphere to set interest rate and to fix the different tools of monetary policy. The authors viewed the liberalization -of interest rates and capital account- as an efficient solution to eliminate directed credits and to remove control of interest rate and high reserve requirements. They consider the external financial liberalization as an important economic policy tool that enhances economic growth. McKinnon and Shaw consider financial liberalization as a mainstay of economic reforms in developing countries (Balassa, 1989). They called these countries to participate to the global financial integration to benefit the advantages of interconnected financial systems and to promote their banking and financial sector.

In the late eighties, financial liberalization became a strategy suggested by the International monetary fund under a framework called “Structural Adjustment Programs” (SAPs henceforth) to rescue fragile economies, notably those of developing countries (Hamdi *et al.* 2013). This framework suggests the easing of portfolio restrictions on banks, changing in the ownership of banks, enhancing competition among banks, integrating of domestic entities to international markets, as well as changing in the monetary policy environment (Ucer 1998). As a result, numerous countries adopted the SAPs and have progressively liberalized their economies.

Literature on financial liberalization is rich and abundant. However, the empirical studies have produced mixed and conflicting results on the benefits of financial liberalization on the performance of the banking sector and/or economic growth. In fact, some authors (Levine 2001, Prasad *et al.* 2003, Mishkin 2005) showed that liberalization of capital flows can benefit both source and host countries by improving resource allocation, reducing financing costs, increasing competition and accelerating the development of domestic financial systems (IMF, 2012). Rogoff (1999) showed that liberalization of capital flows enhances the level of free trade in financial claims; reduces the misallocation of resources and increases investment. Prasad *et al.* (2003) showed that opening up an economy to capital flows promotes domestic savings, reduces the cost of capital, and reduces the consumption volatility. Mishkin (2005) supports these arguments and add that liberalization stimulate the domestic financial sector development, which in turn promotes growth.

On the other hand, several studies showed the adverse impact of liberalization of capital flows (Demirgüç-Kunt and Detragiache, 1998, 2000; Mehrez and Kaufmann, 2000). It was argued that liberalization is a principal threat to economic stability due to the volatility of capital flows. Stiglitz (2002) argued that financial openness leaves emerging market countries vulnerable to external crises, which have a severe negative effect on domestic economic performance. According to Lane and Milesi-Ferretti (2005), the accumulation of larger stocks of gross foreign assets and liabilities has increased the magnitude of fluctuations in the value of cross-border holdings.

Following the multiple crises of the nineties², several studies were carried out to examine the possible link between financial liberalization and banking crises. For example, Kaminsky and Reinhart (1999) showed that among the 26 cases of banking crises they found, 18 of them took place after five years from the liberalization of the financial market. Similarly, Kaminsky (2008) showed that a high level of financial integration increases the risk of sudden stop of capital flows, even in the absence of macroeconomic imbalances found in the host country. In another study, Reinhart and Rogoff (2008) conducted a study to examine the determinants of banking crises for a large sample of countries over the period 1800-2008. They found that, since the early

² The South-Asian and Russian crises in 1997-98, Brazil 1999, Ecuador 2000, Turkey 2001, Argentina 2001, and Uruguay 2002.

19th century, there was a strong correlation between capital mobility and banking crises. The same study also showed that during the periods where capital mobility was interrupted³, there was a remarkable decrease in banking crises. More recently; Joyce (2010) conducted a study to assess the effect of financial integration on the costs and duration of systemic banking crises for 20 emerging countries over the years 1976-2002. He showed that the nature of capital flows (in and out) plays a very important role on the stability of the banking sector of a country. He also found that an increase in foreign direct investment in a country tends to decrease the number and duration of shocks, while foreign debt liabilities have the opposite effect. Milesi-Ferretti and Tille (2010) and Caballero (2010) found that long run foreign direct investments are less vulnerable to liquidity problems.

Given the ambiguity of the results, we aim in this paper at investigating the consequences of financial liberalization (*dejure* and *defacto*) on the probability of triggering a banking crisis in developing countries within a Panel Logit model. Our methodology follows the previous studies, (Demirgüç-Kunt and Detragiache (1998), Choudhry and De Haan 2008, Joyce 2010, etc), but it differs in at least three points. First, we use more recent data which covers the period from 1984 to 2007. Second, we include in our sample more developing countries; 58 in all⁴. Third, while available studies have used only three indicators of foreign direct investments scaled by gross domestic product (GDP henceforth), we use in this paper six different ratios. Therefore, the paper focuses on the responses of foreign direct investment, portfolio flows, and other debt flows to financial liberalization and it examines the interaction between these indicators and the total foreign direct assets and liabilities. The main finding of this paper reveals that indicators of financial liberalization (*dejure* and *defacto*) did not trigger banking crises in our sample.

The remainder of the paper is organized as follows: section 2 describes the methodology and data, section three presents the empirical results and section four concludes.

³ For example, after the Second World War until the 1970s.

⁴ We are interested to examine developed countries for several reasons. First, they are much exposed to external shocks as the level of their real income per capita is not sufficient to withstand a banking crisis. Second, banks' balance sheets of developing countries are basically based on traditional activities and therefore, there is no diversification of risks. Consequently, they are vulnerable to any supply side shocks. Third, as Schmukler (2004) opined, deregulation, privatization, and advances in technology made foreign direct investment (FDI) and equity investments in emerging markets more attractive to firms and households in developed countries.

2. Methodology

2.1. Data and variables

In this study, we use a Panel of 58 developing countries for a time period from 1984-2007. The econometric estimation is based on Panel Logit regression approach as the dependent variable, which is the probability of occurrence of bank crisis (BC), is assumed to be a binary choice variable. With the use of Panel Logit regression we can see how changes in the different explanatory variables affect the probability of a bank crisis. Furthermore, the Logit model will help us in interpreting the regression coefficients more closely to the changes in the probability of bank crisis.

For data on bank crises episodes, it was drawn from the surveys of Caprio and Klingebiel (1996) Demirgüç-Kunt and Detragiache (1997) which was recently updated by Caprio *et al.* (2005) and Laeven and Valencia (2008). The set of explanatory variables will be the same as Demirgüç-Kunt and Detragiache's (2003 and 2005) and they are categorized as follows:

$$BC = f(BV, MV, FLV)$$

BC is the dependent variable that reflects the probability of occurrence of a Bank crisis. It takes a value of 1 if a country experienced a crisis and zero for otherwise. BC is a function of three vectors: the first vector includes banking variables (BV); the second includes macroeconomic variables (MV) while the last vector includes indicators of financial liberalization (FLV). These variables were collected from the CD-ROM of the IMF's International Financial Statistics.

BV is a vector of 3 variables that reflects some characteristics of a country's banking sector. These variables are the ratio of broad money to the foreign exchange reserves of the central bank (M2/RES), which captures the vulnerability of the economy to sudden capital outflows triggered by a run on the currency (Büyükkarabacak and Valev 2008). Greater M2 to reserves ratio is expected to raise the likelihood of banking crises. We use the ratio of bank credit to the private sector scaled by GDP (CPS/GDP) which is an indicator of financial development of a country. We also use the growth of bank credit to the private sector (GC) which reflects the dynamic and evolution of lending activities in a country.

MV is a set of macroeconomic variables which includes real gross domestic product per capita (GDPpc) which has been negatively linked to banking crises (Demirgüç-Kunt and Detragiache 1997). We include the rate of real GDP growth (GDPGR) which captures macroeconomic developments that affect the quality of bank assets. This ratio is expected to minimize the effects of financial crises. We will use Inflation rate (Inf.) which is measured by percentage change in the consumer price index. Finally, there would be a variable to measure the degree of openness of the economy. This variable is defined as export plus import scaled by GDP (Op.). The intuition for including this variable is straightforward.

Regarding variables of financial liberalization (FL), they are divided in 2 categories: *de jure* and *de facto*. The *defacto* measure is extracted from the database of Lane and Milesi-Ferretti (2007), updated in 2009. According to these authors, international financial integration (IFI) is measured by an index constructed through a dataset for the stocks of gross foreign assets and liabilities for 145 nations during the period of 1970-2004. It is as follows:

$$IFI_{it}^{PIB} = \frac{(GFA_{i,t} + GFL_{i,t})}{GDP_{i,t}}$$

Where $GFA_{i,t}$ the stock of gross foreign direct assets and $GFL_{i,t}$ is the gross stock of foreign direct investment liabilities. Following Demirgüç-Kunt and Detragiache (1998), Choudhry and De Haan 2008, Joyce 2010, among others, we use foreign assets and foreign liabilities scaled by nominal GDP, noted Foreign Assets/GDP and Foreign Liabilities/GDP respectively. However, unlike Bonfiglioli (2008) and Joyce (20011), we use the components of Foreign Liabilities (FL) scaled by the total assets and total liabilities to get better understanding of the weight of each component in each country. Therefore, while these authors have used three indicators; in this paper we will use six which are: foreign direct investment, Debt and Foreign portfolio liabilities scaled by total assets and total liabilities each.

The *Dejure* index is the second indicator of financial liberalization. It is an index constructed by Chinn and Ito (2007) which includes four variables: variable indicating the presence of multiple exchange rates, variable indicating restrictions on current account transactions; variable

indicating restrictions on capital account transactions; and variable indicating the requirement of the surrender of export proceeds.

All the variables of the model are lagged one year before the date of *defacto* financial liberalization to test the effect of the level of capital flows on the probability of occurrence of a banking crisis.

2.2. The Model

We specify a conditional Logit Panel model with individual specific effects where the dependent variable, $BC = 1$ if crisis occurs and 0 otherwise. The aim of this method is to identify the factors that determine the occurrence of a bank crisis by developing countries. The model is expressed as follows:

$$BC_{it} = \begin{cases} 1 & \text{if } y_{it}^* > 0 \\ 0 & \text{otherwise} \end{cases}$$

y_{it}^* is a linear function that depends on a vector of explanatory variables.

$$y_{it}^* = \alpha + \beta_1 FL_{it} + \beta_2 X_{it} + \varepsilon_{it}$$

With $\varepsilon_{it} = \mu_i + \vartheta_{it}$ is an error term that contains country and time specific fixed effects:

Where, the ϑ_{it} are assumed to be independent and identically distributed with mean zero and variance σ^2

X_{it} : Vector of all the explanatory variables (banking and macroeconomics)

FL_{it} : Variables of Financial liberalization.

Consequently, the probability that a country i experiences a banking crisis in the year t is as follows:

$$P(BC_{it} = 1) = P(Y_{it}^* > 0) = F(\beta_1 FL_{it} + \beta_2 X_{it}) = \frac{\exp(\beta_1 FL_{it} + \beta_2 X_{it})}{1 + \exp(\beta_1 FL_{it} + \beta_2 X_{it})}$$

Where F is the partition function.

3. Results

3.1. Determinants of banking crises

Table 1 reports the estimation's results of the determinants of banking crises and the role of financial globalization on the triggering of these crises. As one can see, there are three different equations. In equation 1 we include the control variables commonly used in the empirical literature dealing with the issue of banking crises (Demirgüç-Kunt and Detragiache (1998), Choudhry and De Haan 2008, Bonfiglioli (2008), Joyce (2011)). As we mentioned above, selected control variables are lagged for one period.

Tableau1: Determinants of banking crisis

	1	2	3
VARIABLES	BC	BC	BC
GDPGR(t-1)	-0.106*** -0.0216	-0.107*** -0.0226	-0.107*** -0.0226
GDPpc(t-1)	-0.0623 0.161	-0.0267 0.155	-0.0227 0.166
M2/Reserves(t-1)	-0.0016 -0.00167	0.0246*** -0.00813	0.0245*** -0.00817
Inflation(t-1)	0.195** -0.0942	0.231** -0.0963	0.230** -0.0971
CPS/GDP(t-1)	0.0187*** -0.00576	0.0215*** -0.00588	0.0215*** -0.00587
CG.(t-1)	0.173*** -0.0658	0.195** -0.0805	0.196** -0.0805
Op.(t-1)	-	-0.00821* -0.00447	-0.00813* -0.00462
defacto(t-1)		-0.0691 -0.125	-
Liabilities/GDP(t-1)		-	-0.0644 -0.142
Assets/GDP(t-1)		-	-0.104 -0.527
Constant	-2.561** -1.08	-2.430** -1.096	-2.455** -1.153
Observations	1,000	979	979
Number of Id	58	58	58
Log Lik	-333.5	-321.1	-321.1
Pseudo R2	0,430	0,451	0,451

***, ** and * indicate 10%, 5% and 1% level of significance respectively

The coefficient of economic growth, proxied by GDP growth (GDPGR), is negative and significant at 1% level of significance. This shows that banking crises get triggered when the economic performance of a country is weak. More rapid economic growth is associated with increasing incomes and a low probability of a banking crisis.

The coefficient of inflation is positive and significant at a 5% level of significance. This indicates that a banking crisis is likely to occur in countries with a high inflation rate. The variable M2/reserves is negative but not significant while the domestic credit growth (CG) and private sector credit to GDP (CPS/GDP) are both positive and significant at the 1% level. This confirms the effect of rapid domestic credit growth on the probability of occurrence of banking crises. Despite the huge finance and growth literature showing the positive relationship between greater credit levels and economic growth, it appears that rapid growth in bank credit to the private sector is associated with banking crises in developing countries. Our finding joint the previous studies (Demirgüç-Kunt and Detragiache 1997, Kaminsky, Lizondo, and Reinhart 1998, and Kaminsky and Reinhart 1999) and follows the IMF' (2004) estimates which found that about 75 percent of credit booms in emerging markets end in banking crises.

In equation 2, we added two variables that reflect the liberalization process. The first variable is openness (OP.) and the second one is *defacto* liberalization and both are lagged of one year. The results of the model are similar to the previous one but M2/reserves becomes positive and significant at 1% level of significance. This shows that, following the liberalization process, when the financial sector holds considerable foreign currency liabilities it becomes more exposed to a banking and financial crisis.

The coefficient of openness (Op.) is negative and significant at 10% level of significance. This indicates that openness to external financial systems could facilitate the transmission of crises and confirms the effect of macroeconomic shocks on the probability of occurrence of banking crises. Regarding *defacto* liberalization, it has a negative sign but is not significant.

Turing now to the third equation; we replaced *defacto* liberalization by its two components which are foreign assets to GDP and foreign liabilities to GDP. Despite this disaggregation, the result is identical to the model 2.

3.2. *Defacto and Dejure* liberalization and banking crisis

We use a new method to estimate how foreign direct investment could generate a banking crisis. While Joyce (2011) and other previous studies have used three⁵ components of foreign direct liabilities scaled by the country's GDP, we will use in this paper's six lagged indicators namely: Debt/Total Assets, Foreign Direct Investment/Total Assets, Foreign Portfolio Equity Liabilities/Total Assets, Debt/Total Liabilities, Foreign Direct investment Liabilities/Total Liabilities and Foreign Portfolio Equity Liabilities /Total Liabilities. The aim of this disaggregation is to measure the weight of each component in the total foreign direct investment and to give a better understanding of which ratio is the most likely to trigger a banking crisis.

3.2.1. *Defacto* liberalization and banking crisis

In the section above we followed the previous empirical studies and we proxied *defacto* liberalization by an index of international financial integration (IFI). Empirical results show that *defacto* liberalization does not have any considerable role in triggering financial and banking crisis. By divided *defacto* into Liabilities/GDP and Assets/GDP ratios, we also found similar results. In this section we disaggregate these two measures by type of capital flows. Therefore, we will use the six ratios as explained above. The results are displayed in the table below.

⁵ Foreign direct investment (FDIL/GDP), foreign portfolio equity liabilities (FPEL/GDP) and foreign debt investments (FDL/GDP).

Table 2. Banking crises and *Defacto* liberalization

	1	2	3	4	5	6
VARIABLES	BC	BC	BC	BC	BC	BC
GDPGR (t-1)	- 0.0994*** -0.0217	-0.141*** -0.0275	-0.201*** -0.0407	- 0.0986*** -0.0216	-0.100*** -0.0216	-0.195*** -0.0405
GDP.pc (t-1)	-0.0112 -0.158	-0.0987 -0.183	0.259 -0.287	0.111 -0.162	0.108 -0.16	0.34 -0.286
M2/Reserves (t-1)	0.0209** -0.00875	0.0221** -0.00883	0.0479** -0.0204	0.0213*** -0.00822	0.0211** -0.0082	0.0284** -0.0144
Inf. (t-1)	0.222** -0.0972	0.174 -0.111	0.124 -0.158	0.173* -0.0979	0.162* -0.098	0.317** -0.155
CPS/GDP(t-1)	0.0234*** -0.00616	0.0237*** -0.00668	0.0248*** -0.00807	0.0225*** -0.00589	0.0215*** -0.00588	0.0390*** -0.0107
CG. (t-1)	0.196** -0.0803	0.339 -0.268	0.636 -0.499	0.200** -0.0849	0.201** -0.0856	0.155 -0.224
Op. (t-1)	- 0.00921** -0.0043	-0.008 -0.00495	-0.00961 -0.00606	-0.00735* -0.00422	-0.00688 -0.00424	-0.0121* -0.00703
Debt/Tot.A(t-1)	0.905 -0.748					
FDIL/Tot. A (t-1)		1.662 -1.498				
FPEL/Tot.A (t-1)			-7.94 -8.971			
Debt/Tot.L(t-1)				2.103** -0.947		
FDIL/Tot.L(-1)					-2.713** -1.08	
FPEL/Tot.L (t-1)						2.176 -3.629
Constant	-3.127*** -1.166	-1.966 -1.259	-4.484** -2.145	-5.031*** -1.523	-2.800*** -1.051	-6.082*** -2.129
Observations	979	779	528	979	979	625
Number of Id	58	51	41	58	58	54
Log Lik	-320.5	-260.7	-144.9	-318.6	-317.7	-157.2
Pseudo R2	0,452	0,554	0,752	0,455	0,457	0,731

***, ** and * indicate 10%, 5% and 1% level of significance respectively

As we have six indicators, we will separately introduce each ratio along with the set of explanatory variables. Unlike Joyce (2011), we keep the openness variable (OP) as it was significant and positive in the equation 2 and 3 of table 1.

In the first equation, we introduced the debt to total foreign assets ratio (debt/Tot.A) and we found that it does not trigger a banking crisis in developing countries. We also found that the results of the explanatory variables remained unchanged except for M2/Reserves which became positive and significant at 5% level of significance. Again, this shows the problem of holding large foreign currency liabilities. This scenario is the main reason behind the Asian financial crisis of 1997 in which the currency depreciation ravaged the financial sector of the so called “Tigers countries”. In equation 2 when we added foreign direct investment liabilities to total assets (FDIL/Tot. A.), we also found that this ratio does not trigger a crisis. However, inflation, credit growth and openness have become non-significant. Similar results were found while introducing foreign portfolio equity liabilities ratio (FPEL/Tot.A). In equation 4 when introducing debt to total foreign liabilities ratio we found that it could trigger a financial crisis and all the explanatory variables, except GDP per capita, are significant. This shows that crises could happen in countries with a large debt ratio. The recent experience of PIIGS⁶ countries and Cyprus are the best witness of problem related to high debt. Similar results were found in equation 5 with foreign direct investment liabilities to total foreign liabilities ratio but openness becomes insignificant. Finally, in equation 6, foreign portfolio equity liabilities to total liabilities ratio is positive but not significant which mean that it could not engender a crisis in these developing countries.

3.2.2. *Dejure liberalization and banking crisis*

In this section, we aim at measuring whether or not *dejure* liberalization triggers banking crises in the developing countries. To this end, we use only the *dejure* indicator and we introduce the different variables which are in liaison with the *dejure* liberalization. The results are displayed in the table 3.

⁶ Portugal, Ireland, Italy, Greece and Spain.

Table 3 : Banking crises and *Dejure* liberalization

	1	2	3	4
VARIABLES	BC	BC	BC	BC
GDPGR (t-1)	-0.123*** (0.0237)	-0.130*** (0.0257)	-0.133*** (0.0262)	-0.126*** (0.0266)
GDP.pc (t-1)	-0.0866 (0.171)	-0.123 (0.179)	-0.136 (0.180)	-0.125 (0.178)
M2/Reserves (t-1)	0.0256*** (0.00861)	0.0259*** (0.00860)	0.0265*** (0.00858)	0.0240*** (0.00842)
Inf. (t-1)	0.292*** (0.110)	0.295*** (0.110)	0.319*** (0.114)	0.263** (0.110)
CPS/GDP(t-1)	0.0254*** (0.00655)	0.0250*** (0.00655)	0.0262*** (0.00662)	0.0265*** (0.00654)
CG.(t-1)	0.210** (0.0914)	0.210** (0.0907)	0.222** (0.0949)	0.313** (0.135)
Op.(t-1)	-0.00886* (0.00465)	-0.00773 (0.00489)	-0.00984* (0.00505)	-0.00856* (0.00482)
L.F.dejure (t-1)	-0.113 (0.109)	-0.0996 (0.110)	-0.0285 (0.110)	-0.0590 (0.109)
Liabilities/GDP(t-1)		-0.107 (0.157)	-0.164 (0.162)	-0.420 (0.264)
Size			0.0417 (0.0304)	
Public debt/GDP (t-1)				0.00693* (0.00413)
Constant	-2.350** (1.165)	-2.030 (1.245)	-2.411* (1.300)	-2.157* (1.266)
Observations	954	954	931	925
Number of Id	58	58	57	58
Log Lik	-302.7	-302.5	-288.0	-292.0
Pseudo R2	0,482	0,483	0,507	0,501

***, ** and * indicate 10%, 5% and 1% level of significance respectively

In the first equation, the *dejure* variable is negative and not significant. This shows that it does not trigger banking crises in the developing countries of our sample. On the other hand, all the explanatory variables, except GDP per capita, are significant.

In the second equation, we introduced foreign liabilities to GDP ratio but the results remained unchanged and *dejure* does not produce a crisis. Again, when introducing the size of the government, measured by the government final consumption expenditure as a share of GDP, we do not find any change. Finally, in the last equation, we added the public debt of the country as a

share of GDP. It is well known that larger government budget deficits are expected to increase the probability of crises. In the estimation, we find that the public debt ratio is positive and significant at a 10% level of significance and the signs of the other explanatory variables remain unchanged. It appears that when the budget deficit increases, developing countries are incapable to support the high costs of insolvent banks. Moreover, governments facing severe fiscal imbalances are more likely to use the financial sector as an off-budget source of funding for government objectives, by pressuring banks to direct loans to favored borrowers. According to Keefer (2001), since securing repayment of loan obligations from these borrowers is typically a difficult proposition for banks, these pressures can translate into solvency difficulties for the financial system.

4. Conclusion

The aim of this paper is to examine the consequences of financial liberalization on the economic and financial stability of developing countries. Precisely, we tried to understand whether the adoption of financial liberalization is followed by banking crises or not. Our sample covers a panel of 58 countries observed during the period 1984-2007. The empirical analysis is based on Panel Logit model. Empirical results show that *dejure* liberalization does not trigger a banking crisis in our sample. Regarding *de facto* liberalization, results also show that it does not have any considerable role in triggering financial and banking crises. By dividing *de facto* into Liabilities/GDP and Assets/GDP ratios, we also found similar results. However, the disaggregation of these two measures by type of capital flows, empirical results show that foreign debt liabilities to total liabilities and foreign direct investment liabilities to total liabilities generate banking crises in these countries. Therefore, these are the real factors of banking crises in developing countries in relation with financial liberalization.

Annex

3.1. Statistics table

	Obs	Mean	St. Dev.	Min	Max
BC	1536	.1295573	.3359251	0	1
GDP	1445	3.421713	6.847834	-51.03086	106.2798
GDPpc	1457	6.835229	1.074326	4.056728	9.147261
M2/Reserves	1372	39.16153	370.6495	.000116	7427.439
Inflation	1237	2.495222	1.522796	-3.296556	10.10283
Credit/GDP	1344	29.27446	27.04324	.6827951	165.7191
Credit Growth.	1272	1.551145	34.1434	-9.863692	1201.817
Openness	1407	69.45314	37.30908	12.34638	280.361
<i>Dejure</i>	1404	-.2339293	1.414839	-1.85564	2.45573
<i>Defacto</i>	1426	1.582131	2.166722	.1660583	31.25265
Liabilities/GDP(t-1)	1426	1.251492	2.08078	.0495588	30.95495
Assets/GDP(t-1)	1425	.3308708	.3496893	.0162082	4.653005
FDAL/ Tot.Liabilities	1425	.225361	.1633689	.0004923	.9251236
FDAL/Tot.Assets.	1077	.0755085	.096875	.0000193	.6109056
Debt/ Tot.Liabilities	1426	.7502077	.1842804	.0680942	1
Debt/Tot.Assets.	1425	.5630739	.2029139	.0797269	.9959071
FREL/ Tot.Liabilities	1426	.0244106	.0558812	0	.462468
FPEL/Tot.Assets	1425	.0131464	.033851	0	.3938915

Table 1 : List of countries

Algeria	Guinea	Panama
Argentina	Guinea-Bissau	Peru
Armenia	Guyana	Philippines
Azerbaijan	Haiti	Romania
Bangladesh	Indonesia	Russian Federation
Belarus	Jamaica	Senegal
Bolivia	Jordan	Sri Lanka
Brazil	Kenya	Tanzania
Bulgaria	Latvia	Thailand
Burkina Faso	Liberia	Togo
Cameroon	Lithuania	Tunisia
China	Madagascar	Turkey
Colombia	Malaysia	Uganda
Congo. Dem. Rep.	Mali	Ukraine
Congo. Rep.	Mexico	Venezuela. RB
Dominican Republic	Morocco	Vietnam
Ecuador	Mozambique	Yemen. Rep.
Egypt. Arab Rep.	Nicaragua	Zambia
El Salvador	Niger	
Ghana	Nigeria	

References

- Balassa B (1989), Financial liberalization in Developing Countries. *Background paper for the World Development Report The World Bank September 1989 WPS 55*
- Balassa B . (1989). Financial liberalization in Developing Countries. *Background paper for the World Development Report The World Bank September 1989 WPS 55*.
- Bonfiglioli, Alessandrar. (2008). Financial integration, productivity and capital accumulation. *Journal of International Economics, Elsevier, vol. 76(2), pages 337-355, December*.
- Caballero, Julian. (2010). Do surges in international capital flows influence the likelihood of banking crises? *Working Paper*.
- Caprio, G. et Klingebiel D. (2003). Episodes of Systematic and Borderline Financial Crises. *World Bank working paper*.
- Caprio, G., Klingebiel, D., Laeven, L., Noguera, G. (2005). Banking Crisis Database. In *Systemic Financial Crises: Containment and Resolution*. Honohan, Patrick, and LucLaeven (eds). *New York, NY: Cambridge University Press*.
- Chinn, M. et Itô, H. (2008). A New Measure of Financial Openness. *Journal of Comparative Policy Analysis*, pages307-320.
- Choudhry Tanveer Shehzad et Jakob de Haan. (2009). Financial Reform and Banking Crises. *CESifo Working Paper Series 2870, CESifo Group Munich*.
- Demirguc Kunt, A. et Detragiache, E. (1997). The Determinants of Banking Crises - Evidence from Developing and Developed Countries. *IMF Working Papers 97/106, International Monetary Fund*.
- Demirguc Kunt, A. et Detragiache, E. (2005). Cross-Country Empirical Studies of Systemic Bank Distress: A Survey. *IMF Working Papers 05/96, International Monetary Fund*.
- Demirguc-Kunt, A. et Detragiache, E. (1998). Financial Liberalization and Financial Fragility. *World Bank, Working Paper(N. 1917)*.
- Demirguc-Kunt, A. et Detragiache, E. (1998). The Determinants of Banking Crises in Developing and Developed Countries. *IMF Staff Papers, 45(1), pp.81-109*.
- Demirguc-Kunt, A. et Detragiache, E. . (2000). Monitoring Banking Sector Fragility: A Multivariate Logit Approach . *The World Bank Economic Review* , pages 287-307.

- Demirguc-Kunt, Asli & Detragiache, Enrica. (2002). Does deposit insurance increase banking system stability? An empirical investigation. *Journal of Monetary Economics, Elsevier*, vol. 49(7), pages 1373-1406, October.
- Hamdi H, (2013), Hakimi A and Djelassi M Did Financial Liberalization Lead To Bank Fragility? Evidence form Tunisia. *The International Journal of Business and Finance Research*. V7 (5), 2013).
- IMF (2012), Liberalizing Capital Flows and Managing Outflows, Background Paper. International Monetary Fund, WDC, March 16, 2012.
- International Monetary Fund. (2004). World Economic Outlook: Advancing Structural Reforms. *World Economic and Financial Surveys (Washington)*.
- International Monetary Fund. (2012). Liberalizing Capital Flows and Managing Outflows—Background Paper. *Washington: International Monetary Fund*.
- Joyce, J. (2010). Financial Globalization and Banking Crises In Emerging Markets. *Open Economies Review*, pp 1-21.
- Kaminsky, Graciela L. et Carmen M. Reinhart. (1999). The Twin Crises: The Causes of Banking and Balance of Payments Problems. *American Economic Review*, Vol. 89(No.3), 473–500.
- Laeven, L. et Valencia, F. (2012). Systemic Banking Crises Database: An Update. *IMF Working Papers 12/163, International Monetary Fund*.
- Lane, Philip R. et Milesi-Ferretti, Gian Maria. (2007). The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970–2004. *Journal of International Economics* 73 (2): 223-250.
- Levine, R. (2001) International Financial Liberalization and Economic Growth. *Review of International Economics*. Vol 9(4) 688-702
- Levine, Ross. (2001). International Financial Liberalization and Economic Growth. *Review of International Economics*. VOL 9(4) 688-702.
- McKinnon, R. . (1973). Money and Capital in Economic Development. *Washington, D.C.: Brookings Institution*.
- McKinnon, R.I. (1973) *Money and Capital in Economic Development*, the Brookings Institution, Washington D.C.
- Mehrez, G and Kaufman D (2000), “Transparency, Liberalization and Banking Crises”, World Bank Policy Research Working Paper No. 2286.

- Mehrez, G. et D. Kaufmann. (2000). Transparency, liberalization and banking crises . *World Bank Working paper*, N° 2286.
- Milesi-Ferretti, G.-M. et C. Tille . (2011). The great retrenchment: international capital flows during the global financial crisis. *Economic Policy, CEPR & CES & MSH*, vol. 26(66), pages 285-342, 04.
- Milesi-Ferretti, Gian Maria et Cédric Tille. (2010). The Great Retrenchment: International Capital Flows during the Global Financial Crisis. *Economic Policy*.
- Mishkin, Frederic S. (2005). Is Financial Globalization Beneficial? *NBER Working Papers 11891, National Bureau of Economic Research, Inc.*
- Prasad, Eswar, Kenneth Rogoff, Shang-Jin Wei et M. Ayhan Kose. (2003). Effects of Financial Globalization on Developing Countries: Some Empirical Evidence. *Research Department, International Monetary Fund*. (Occasional Paper No. 220).
- Reinhart, Carmen et Kenneth Rogoff. (2008). Banking crisis: An equal opportunity menace. *NBER paper*(N°14587).
- Rogoff, K.S. (1999). International Institutions for Reducing Global Financial Instability. *Journal of Economic Perspectives, American Economic Association*, vol.13(4), pages21-42, Fall.
- Schmukler S. L. (2004) Benefits and Risks of Financial Globalization: Challenges for Developing Countries. Globalization, Growth, and Poverty, World Bank Policy Research Report
- Schmukler, Sergio L. (2004). Financial globalization: gain and pain for developing countries. *Economic Review, Federal Reserve Bank of Atlanta*, issue Q 2, pages 39 - 66.
- Shaw, E. (1973). Financial Deepening in Economic Development. *New York: Oxford University Press*.
- Shaw, E.S. (1973) *Financial Deepening in Economic Development*. Oxford University Press, New York
- Stiglitz, J. E. (2002). *Globalization and its Discontents*. New York: W.W.Norton & Compagny.
- Ucer, M, E (1998), Notes on Financial Liberalization. Macroeconomic management: New methods and current policy issues, organized by African Economic Research Consortium (AERC), Nairobi, April 20-30 1998

Ucer, M, E . (1998). Notes on Financial Liberalization. Macroeconomic management: New methods and current policy issues. *organized by African Economic Research Consortium (AERC), Nairobi, April 20-30 1998.*